THE CIRCLEVILLE EARTHWORK AND HOPEWELL

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It is time to restore the Circleville earthwork to its former vaunted stature — time to undo the damage done to the reputation of this remarkable earthwork by no other than E. G. Squier and E. Davis (Squier and Davis 1848). These two, in their epochal 1848 work, *Ancient Monuments of the Mississippi Valley*, barely mentioned the Circleville earthwork. They did so almost as an afterthought in their description of the Frankfort Works:

> *"The combination of the great circle and the square, in this work,"* [they refer to the Frankfort work] *"is identical with that which exists in the celebrated Circleville work—which work, it may be observed, is no more remarkable than others, and owes its celebrity entirely to the fact, that it has been several times described with some minuteness."*
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> *A reduced plan"* [really miniscule] *"of the Circleville work, Fig. 10, is herewith presented, which will sufficiently illustrate this remark. Its dimensions were considerably less than those of the analogous structures already described. The sides of the square measured not far from nine hundred feet in length, and the diameter of the circle was a little more than one thousand feet. The work was peculiar in having a double embankment constituting the circle. It is now almost entirely destroyed."*

Why such a demeaning attitude? Squier and Davis gave us a good hint when they wrote: *… owes its celebrity entirely to the fact, that it has been several times described with some minuteness."* They might have added that it had been described earlier and very well by Caleb Atwater of Circleville, Ohio.

Atwater treated several of the major Ohio works in his monumental work, *Description of Antiquities Discovered in the State of Ohio and Other Western States*, published in 1820. For this Atwater has been recognized, along with Thomas Jefferson, as one of the earliest, if not the earliest, American archaeologist. His widespread reputation was certainly not lost on Messrs. Squier and Davis and some animosity on their parts is evidenced in their slight of the Circleville earthwork. In fairness to them, at the time of their investigations the Circleville Work was nearly destroyed and an accurate survey by them would have been impossible. They also did not appear to have much respect for Atwater or his survey and hence did not choose to use his map in their book. At any rate, it was unfortunate that personal feelings influenced their thinking and that they did not feature the Circleville Work more prominently, for the importance of this great Work has been diminished because of it.

Atwater was the first to describe the Circleville Earthwork in detail, but 45 years earlier it was the first Ohio earthwork brought to the attention of the east coast when a map of it was published in the "Royal American Magazine" of Boston in 1775. This map was dated October 17, 1772, and was probably made by the English Trader, John Irwine, and carried to the east coast by a Baptist missionary, David Jones (Lepper, 2005). This map is copied in Figure 1. This map was assumed to have been made from a horse-back survey, but a careful examination of the dimensions shows it to have been made by a more careful survey. The ratio between the diameter of the circle and the length of the square's side matches very closely the same ratio from Atwater's and other surveyors' measurements. The square was covered by large trees in 1772, and the earthwork must have been in pristine condition at this early date.

A reexamination of the Circleville Work and its surrounding area in light of presently known archaeological facts is in order, and especially so, since this earthwork was unique in several ways — so unique, in fact, that the study of it sheds new light on the Hopewell.

Atwater's map of the Circleville Work is copied in Figure 2. A map more like what Squier and Davis should have made is shown in Figure 3. The earthwork was the type having an axis of symmetry with a circle joined to a square by a walled avenue. It, as first seen, must have been impressive. According to Atwater, the walls of the square were about 10 feet high and the eight platform mounds within the square were four feet high and about 20 feet across at their tops "and 40 feet perhaps in diameter at the base". The walls of the circle were 5-6 feet high with the ditch between them being from 15 to 19 feet deep. The platform mound centered in the circle was 10 feet high and 30 feet across at the top. The square was measured "exactly 55 rods from outside to outside" (907.5 feet), and the outer circle had a diameter of 69 rods (1,139 feet) measured from outside to outside. Atwater did not give a diameter for the inner circle, but its diameter was estimated by Marshall (Marshall, 1987) at 1,056 feet. All impressive, and even more so when considering the scale of these works, for they covered all of what is now downtown Circleville. That's nine square blocks and enough to encompass all of the Circleville Pumpkin Show: a twentieth and twenty-first century annual October ritual centered at Court and Main Streets. This intersection lies at the exact location formerly occupied by the platform mound once centered in the great double circle.

I suspect that in Hopewell times these earthworks were more complex than just the earthen-walled enclosures that greeted the pioneers. For example, the earthen walls were probably only part of a palisade structure including, perhaps, a roofed arbor for protection of the viewing or participating Hopewell attendees. The post-hole pattern of such an arbor was found under the wall of the circular William Reynolds earthwork below Fort Hill in Highland County (Baby, 1954, Otto, 1989), and a possibly similar architecture has also been conjectured for at least part of the circular portion of the Highbank Work in Ross County (Greber and Shane, 2009). The eight platform mounds in the square and the central mound in the circle could have held structures as well.

Atwater shows two mounds just outside the earthwork walls. The one to the southwest was situated on a rise, which held a good view of the works. The early residents of Circleville gave this mound the Biblical name, "Mount Gilboa," for they considered the humans buried within it to be the victims of a great battle. This mound was so prominent that they truncated and used it as a platform for speeches and political rallies (W. Higgins, 2008). It later served as the foundation of the first Episcopal Church in Circleville and 30 - 40 steps were required to reach the front door. The first church and the remainder of the underlying mound were later removed completely for a second church building.

The mound was large and contained many burials situated with their heads oriented to the center of the mound. A mound with a similar burial arrangement was found within the Newark earthworks (Lepper, 1993). Another mound with 13 burials arranged with their heads to the center of the mound was located on the Scioto flood plain below the Highbank Work in Ross County, Ohio (Radcliffe, 1971). One of the burials was accoutered with large copper beads and a unique keeled gorget was also associated with the burials. In the Circleville mound, gorgets, axeheads, and projectile points were present near the skulls of most of the burials. The burials included all ages and were through the mound from top to bottom. Since none of the artifacts were adequately described by Atwater, an educated guess as to exact cultural affiliation is not possible. The mound was almost certainly Adena or Hopewell. Could it have been the burial place of the general populace, as Atwater inquires of his readers? The other mound lying just north of the square was described in the notes on Atwater's map as a large mound, but it is drawn differently than the large burial mound to the southeast of the Circle. One can conjecture, from the way Atwater illustrated it, that it was rather large in diameter but lower in height than the other mound by the circle. Atwater makes no mention of it in the text of his book. It could have been a natural feature, but the general area around and in the downtown Circleville area is very level and a natural feature of the size illustrated was unlikely. It could have been the remains of a small satellite sacred circle or a square of the small variety.

Other works having the conjoined square and circle are at Frankfort, as pointed out by Squier and Davis in the previously quoted section, and at Piketon (Seal). However, neither of these works have a true axis of symmetry, and contrary to Squier and Davis, even though they share many similarities to the Circleville Work, they are not in exactly the same class with it. Hopeton is another example of the combination of the circle and square, and it bears some common features with the Circleville Work in having a circle of the same diameter and having that circle directly intersect the square but without the use of a walled avenue to do so. Two other examples are worthy of mention, and they are parts of the Marietta works and those at Newark. The large conical mound in Marietta is surrounded by a modest-sized circular ditch/wall combination and is joined by a straight wall to a square containing eight small mounds. It

is believed that this circle/mound combination dates from late Adena times and that the square is a later addition. The great fairgrounds circular wall/ditch work was associated with a square (Wright Square) containing eight interior mounds, and there are flaring walls connecting the two in a more casual manner than in the other earthworks. It is interesting that this square is also connected to the circle/octagon part of the Newark works by parallel walls.

The Circleville work can be more appropriately classed with the conjoined circle-octagon works at Highbank and Newark (Figure 4). The square part of the Circleville Work and the octagonal parts of the Newark and Highbank works have eight openings or gateways located at the corners and at the midpoints of each side for the square and at each apex for the octagons. Inside the Circleville, Newark, and Highbank enclosures at each opening was a platform mound "defending the opening," as Atwater would have it. The circles on all these works have the same diameter of 1,050 feet almost certainly suggesting a strong connection among them.

The Circleville earthwork was but one of many geometric earthworks in Ohio, but it was one of the major ones both in terms of its grand scale and in its geometry. The common geometric shapes used in these works are the square and circle, and they are often combined in different relationships in the major works. Many of the larger works are tripartite, with there always being a square part combined with two circular, or nearly circular, parts. Examples are the Baum, Seip, Anderson, Liberty (Harness) and Works East (Figure 5). The conjoined circle-octagon works number just two — they being the Highbank work in Ross County and the Newark works in Licking County — and although they do not have an integral tripartite design, they each have a separate smaller circular earthwork nearby. The Circleville work can be considered a tripartite work in that it has the square and the unique combination of two circles concentric to one another rather than being separate from each other. This could be considered an innovative way to achieve the tripartite architecture evidently so important to the earthwork builders.

The circular earthwork form is early dating from Adena times of around 450 B.C. to about 100 B.C., and sometimes there are mounds within circles, but in many cases the circles stand alone. These circles are much smaller than those built within the large Hopewell complexes. The square form is believed to come into play in Hopewell times of about 100 B.C. to 400 A.D., and it is usually in combination with circular forms but sometimes it too stands alone. Some of the major earthwork forms are shown to scale and orientation in Figure 5. These shapes must have had special meaning to the mound-builder people of Adena and Hopewell times and they probably were of symbolic importance to them. Their dwellings were of standard shapes, with the Adena using round buildings while the Hopewell's were square. It is generally believed that Adena culture developed or was folded into Hopewell. Could the squares and circles in the earthworks represent the Adena and Hopewell house shapes and symbolize their possible melding as one people? For example, the elaborate posthole pattern under the Harness Mound (Liberty Works) combines square and circular parts just as do many of the earthworks, including, in this case, the host Liberty Works (1979, Greber). Or could the two shapes represent the sexes, and/or the moon, the sun, the earth or other cosmic entities? Romain believes the circles represent the earth and the squares the universe (Romain, 2000). This belief holds high merit for, as in the Circleville case, there is a circular wall and ditch combination connected to the square by a walled avenue: a perfect symbolization for the earth below with its circlular walls and ditch possibly containing water, the earth's surface as represented by the connecting avenue, and the sky above represented by the square with its collection of mounds. It is not known, but investigations exploring the possibility that the earthworks were oriented in line with different solar and lunar events could also lay some credence to such speculations (Lepper, 1998, Romain, 2000, Hively and Horn, 1982).

The uniqueness of the Circleville Works is threefold: (1) at the center of the circle was a **Platform** mound with a **ramp**, (2) the circle consisted of **two** earthen walls concentric to one another and separated by a **deep ditch** with a slight terrace on the inside slope, and (3) it was the **northernmost** major earthwork along the Scioto River and was isolated by 16 miles from the major complex of works in the Chillicothe area to the south and by 40 miles from the Newark Works in the Muskingum River drainage to the northeast.

The Central Mound

The question of platform mounds and the Hopewell has long been one of some controversy. This is rather surprising in that all the earthworks of the type under consideration here contain smaller interior platform mounds fronting the entrances to the squares or octagons. However, these mound types do not have ramps. The three large platform mounds at Marietta use ramps and are Hopewell earthworks (Pickard, 1992, 1996). Also there is a ramped platform mound in the Cedar Bank works north of Chillicothe and the nearby Ginther platform mound was also Hopewellian (Shetrone, 1916), however it did not have a ramp. A discussion of platform mounds and Hopewell in Ohio can be found in Shriver's article of 1992 (Shriver, 1992). The central ramped platform mound at Circleville was definitely Hopewellian by its placement and by what was found within it. Caleb Atwater described the mound and its excavation as follows:

> *"D. [The reader is referred to the plate.] Shows the site of a once remarkable ancient mound of earth, with a semicircular pavement on its eastern side, nearly fronting, as the plate represents, the only gateway leading into this fort. This mound is entirely removed; but the outline of the semicircular pavement, may still be seen in many places, not-withstanding the dilapidations of time, and those occasioned by the hand of man."*

Later in his book he goes on to describe the mound in more detail:

> *"The works have been noticed, but the mounds remain to be described. Of these there were several which the ruthless hand of man is destroying. Near the centre of the round fort, a drawing of which is given in this work, was a tumulus of earth, about ten feet in height, and several rods in diameter at its base. On its eastern side, and extending six rods from it, was a semicircular pavement, composed of pebbles, such as are now found in the bed of the Scioto river, from whence they appear to have been brought.*
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> *The summit of this tumulus was nearly thirty feet in diameter, and there was a raised way to it, leading from the east, like a modern turnpike. The summit was level. The outline of the semicircular pavement and the walk is still discernible.The earth composing this mound was entirely removed several years since. The writer was present at its removal, and carefully examined the contents. It contained,*
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> *1. Two human skeletons, lying on what had been the original surface of the earth.*
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> *2. A great quantity of arrow heads, some of which were so large, as to induce a belief that they were used for spearheads.*
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> *3. The handle either of a small sword or a large knife, made of an elk's horn; around the end where the blade had been inserted, was a ferule of silver, which, though black, was not much injured by time. Though the handle showed the hole where the blade had been inserted, yet no iron was found, but an oxyde remained of similar shape and size.*
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> *4. Charcoal and wood ashes, on which these articles lay, which were surrounded by several bricks very well burnt. The skeleton appeared to have been burned in a large and very hot fire, which had almost consumed the bones of the deceased. This skeleton was deposited a little to the south of the centre of the tumulus; and, about twenty feet to the north of it, was another, with which were*
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> *5. A large mirrour, about three feet in length, one foot and a half in breadth, and one inch and a half in thickness. This mirrour was of isinglass, (mica membranacea) and on it,*
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> *6 A plate of iron, which had become an oxyde; but before it was disturbed by the spade, resembled a plate of cast iron. The mirrour answered the purpose very well for which it was intended. This skeleton had also been burned like the former, and lay on charcoal and a considerable quantity of wood ashes. A part of the mirrour is in my possession as well as a piece of a brick, taken from the spot at the time. The knife, or sword handle, was sent to Mr. Peal's Museum, at Philadelphia. "*

Atwater also described the contents of the central mound three years earlier in a letter sent to President James Monroe, who had visited the earthworks with Atwater on August 8, 1817. This letter was published in the March, 1818, issue of "The American Monthly Magazine" (Higgins, 2009):

> *"Near the centre of the circular fort was a small mound, which has been entirely removed and the ground levelled. Near the bottom of this mound Maj. Gen. Denny, now no more, and myself, found a plate of isinglass, about half an inch*

in thickness, eighteen or twenty inches in width, and from two and a half to three feet in length. It was perfectly smooth on one side, and from all appearances, had been used as a mirror. As it had been the constant companion of its fair possessor in life, so it accompanied her in death. To this mirror was probably attached, when it was buried, an iron plate an inch in thickness, because a substance resembling ore, exactly of its size, lay on it. In this mound was found a large quantity of flints for arrows lying in heaps together, and a large knife. The handle of the knife was manufactured from an elk's horn, around which, where the blade had been inserted, was a ferule of silver which was uninjured or nearly so, but the blade had returned again to ore, but the shape and size was, before it was removed, plainly discernible. The handle was sent by Mr. Peter Douglas, the gentleman who found it, to Peale's museum, in Philadelphia."

The ground level cremated burials, in what were probably baked clay basins, mark them as Hopewell. The presence of the mica mirror is also a Hopewellian trait. Unfortunately, Atwater did not illustrate any of the projectile points found in the mound so that we might type them. The elk antler artifact with its silver ferrule was a unique find, and his belief that it held an iron blade is interesting. This could have been very true, as meteoric iron implements have been found in Hopewell mounds. A meteoric iron knife blade, along with a mica plate, was uncovered in 1906 from the Number 65 mound of the Albany Mound Group in northwestern Illinois (Herold, 1971). Many meteoric iron artifacts, such as nuggets, beads, chisels, ear spools, and a breast plate, were found in the Hopewell Mound 25 of the Hopewell Group and iron objects were also found in mounds at the Turner and Liberty Groups (Greber, 2000). The iron chisels were still imbedded in staghorn (probably elk antler) handles, and another object was made of bone and it held evidence of an iron ferrule and an associated iron plate of some sort. This has direct bearing on the knife handle found at Circleville. It is thought that the Hopewell obtained their meteoric iron from the Kansas area. Silver has been found in the mounds, as in Marietta, and was mined along with native copper on the Keweenaw Peninsula of upper Michigan. Peter Douglas sent this artifact to Peale's museum in Philadelphia, but it cannot be located there today in the present natural history museums or in the Baltimore Museum where many of the Peale items eventually accumulated. Inspection of it and the hole for iron rust deposits could answer the iron question as well as if it was ancient or an artifact of frontier times. Atwater also noted that the mica mirror had on it what appeared to be a plate of iron. Whatever the material was, it could have served as a backing for the mirror. As mentioned before, the Hopewell did use hammered meteoric iron in such things as ear spools, blades, breast plates, and other items, but a mica mirror three feet by one and a half feet would have required an inordinate amount of that very rare material.

What Atwater means by burned clay bricks is unclear. Perhaps they were portions of baked clay crematory basins of the type common to some of the Hopewell mounds such as those at Mound City and Harness. They could have been exactly what Atwater termed them, and if so they would be unique to the Circleville Mound.

The mound finds were definitely Hopewellian and mark this mound and the earthworks as being from this period. But does this mean that the mound was originally the ramped platform type discovered by settlers? Could an original conical mound have been truncated and ramped by a later people, say later Hopewellians or even much later by Fort Ancient people? This is a difficult question to answer without having the mound still available for up-to-date excavation techniques. The two burials — were they prepared before any mound building or were they interred through shafts in the existing platform mound? Or was a mound dismantled for their burials and then reconstructed? These were honored dead and they were probably the individuals who served the earthwork and its functions. Perhaps they were cremated in the center of the circle, and were then covered by the platform mound, which served as their memorial. The platform could then have held a building which served as a charnel house and/or temple of some sort. Another possibility is that the burials were interred in a conical mound in the center of the circle and that this ended one era of the earthwork's use. Platform mounds, at least from Mississippian times, functioned mainly as foundations for structures of some kind and not usually as burial mounds. This might imply that the original conical burial mound was truncated and ramped by a later set of people, probably Hopewells, and that maybe at the same time the earthwork underwent some modifications or additions as well. The presence of the semicircular pavement of river cobbles in front (east side) of the mound suggested to Atwater a place for an audience to stand and view whatever occurred on the platform mound. Or again, the stones could have covered the original mound (a common Hopewell practice), and then were possibly removed and spread upon the ground just east of the final mound — this could be held as evidence that the original mound was a conical Hopewell burial mound covered by river cobbles and that a later people removed them and transformed the conical mound into the ramped platform mound present since then. Another interpretation of the gravel pavement could be that it formed an outline of a bird or other mythological figure, for there is substantial precedent for this as in the stone "panther" effigy incorporated within the great Hopewell Mound 25 at the Hopewell Works.

I think we must assume the central platform mound to be Hopewellian because of the other platform mounds within the earthwork, the orientation of the ramp to the opening between the circle and the square, and the lack of any evidence in the archaeological record of later peoples reconstructing an earlier mound for their uses.

The presence of the mound at the center of the circle raises some interesting questions about the use of such earthworks. Its being a ramped platform mound, evidently used for some other purpose than just burial, increases reasons for speculation. A number of investigators are studying Ohio earthworks in an attempt to establish them as celestial observatories (Romain, 1991, Hively and Horn, 1982, Lepper, 1998). Evidence for the Newark and Highbank works being observatories has been published by Hively and Horn. They demonstrated that the Newark circle/octagon works functioned for lunar observation while the Highbank Works could have functioned for both lunar and solar observations. Lunar orientation is postulated at Circleville by Romain (Romain, 1991) as the main axis is orientated at about 112 degrees and the reciprocal of 292 degrees coincides with the azimuth for the moon's minimum north setting. Marshall (Marshall, 1999) admitted that this was a close fit but that the sight line would have been from east to west where there was no opening to the west (the continuous circle exists on the west). However, there is a slight downward slope to the west and the low circular walls would not have been an impediment to viewing the moon set down the axis of the earthwork from the center eastern platform mound guarding the associated opening in the square wall. As in many such studies, things have to be sometimes stretched a bit to make the alignments work. And deciding the central and proper reference points that might have been used by the Hopewells is difficult. Was the Circleville Work or any of the others really used for celestial observation? And if so, would the walls themselves be used for alignments or were there posts situated in and around the works that would have been used? Much study remains to be done.

Central and southern Ohio, where all the major works resided, is not an area well suited for celestial observations because of chronic cloudiness and hazy skies. This area is well known as the second most overcast area of the United States, being superseded only by the Pacific northwest. A Hopewell phratry depending on solar or lunar events and their clear and punctual observations would have been hard pressed to keep things going and to impress their followers. But let us not underestimate the prowess of these remarkable people. Perhaps they had a way to minimize the importance of weather conditions. For example, they could have plotted the lunar or solar positions on clear days in a manner that would have allowed them to predict the solstices, equinoxes, lunar maximum/minimum rises, etc. even if they occurred on cloudy days. But then, lunar and/or solar orientations per se might not have been that important to them. Perhaps the sun in the morning or moon at night on any given day is all they needed for their purposes.

The key to the earthwork's uses probably resided in the central platform mound and in the presence of the eight mounds in the square. Seven of these mounds were probably not visible from the mound in the center of the circle because of the high walls and their possible associated palisades. However, one of these mounds was directly visible, and that was the one fronting the entrance to the square from the circle. Atwater shows this mound to be larger than the other seven within the square — if that was the case, then this mound could have been of more importance than the others. The path between these two mounds was easterly at 112 degrees, with the central platform mound, with its ramp, facing that direction. Could each of the mounds have represented a different clan within the Hopewell social structure, or perhaps celestial bodies or constellations or divinities important to the Hopewells, or were these works game courts, with each mound serving a team or as a goal of some sort? Or were these mounds essentially "guardians" for the openings into the great square?

And probably figuring in all of this is the large mica "mirror" found with one of the burials in the central mound. Any of the mica I have seen does not function very well as a mirror, and I do not think the Hopewells being so vain as to attach excessive importance to their personal reflections. The mica plate more than likely served

as a solar or lunar reflector and was central to the use of the earthworks. Used at the central mound it could direct the rising sun's or moon's rays back into the square to be reflected by other mica plates around to all the mounds: a solar anointment for all the clans, so to speak.

Could mica reflectors have been used as surveying "instruments" in laying out earthworks and roadways? A beam of light is the straightest line possible between two points. We use laser instruments now for surveying and their convenience and accuracy are well appreciated. Another possible use is for signaling from one location to another. There are lines of mounds situated on high points that appear to have been located with long views in mind. Such a series lies along a southeast course from Circleville towards Laurelville.

Another case of a circular earthwork with a central mound containing a clay crematory basin with mica mirrors is described by Squier and Davis. It was located just south of Mound City and is illustrated in their Mound City plate (see Figure 4). This circle (the Shriver Circle) was not directly connected to an earthen square (although Mound City with its square enclosure wall is nearby), but the openings in the circle might well have served astronomical purposes. Of all the Hopewell earthworks, this circle would probably be the most rewarding for investigation by archaeoastronomers. Here, as at Circleville, the presence of a mica mirror as an important burial offering raises questions about the use of mica reflectors (mirrors) in Hopewell ceremonies.

The Hopewells obviously used lunar alignments, but they could also have been sun worshippers much as were the later Aztecs of Mexico and the Nathez temple mound people of the lower Mississippi valley. In these societies, the principals were in charge of the central fire, and the welfare of the whole civilization depended on its maintenance. The Aztecs used human sacrifices to please their gods. Several of the early investigators believed that the Hopewells indulged in human sacrifices. The other burial in the Circleville mound had associated with it many flint points all or some of which were probably knives. One burial with knives and the other with the mica reflector raises some interesting questions. To the southwest of the great circle and near the large burial mound already mentioned was a pit. Atwater relates that it was filled with a profusion of human bones, and all were from adults. Much could be conjectured from all of this, but the pit contents and the large burial mound might not have been directly associated in time or function with the earthwork. The present archaeological evidence indicates that the Hopewells gave heavy weight to mortuary rites involving the dismembering of bodies followed by their cremation in what were probably sacred fires symbolically ignited, perhaps, by mica solar reflectors. The flint "arrowheads" and the iron knife found with the one burial were probably used in these mortuary dismemberments. Whose bodies, how many, how they died, and where and how they were buried is not and probably never will be known.

The Double Circle

The double circular wall is another unique feature of the earthwork. The two walls were separated by a deep ditch. Atwater notes that a terrace was present about halfway down the inside wall of the ditch, and he took it to mean that a palisade was sunk along its course. He also wrote that the inside wall was composed of clay probably taken from a depression which existed to the north within the work. The outside wall was composed of darker loamy soil and gravel taken from the ditch. A palisade or even a small wooden wall would have allowed the outside wall to have been thrown up without the clay from the inside wall falling into the ditch. There is also the possibility that this terrace was the original ground surface and that it was deeper than the surface inside the inner circle because the Hopewells might have intentionally raised the ground surface inside the circle with soil brought from outside the earthwork, maybe even from the circular ditch. It is now known that many, if not all, of the major geometric earthworks were stripped of topsoil before their constructions and that some of them were then artificially filled with other soil. For example, the large horseshoe-shaped mounds in the Portsmouth Works had their interiors filled with soil to a substantial height. The interior of the Hopeton Work was stripped of all the topsoil before its construction (Lynott, 2009), and the same was true for the Highbank Work (Greber, 2008).

Work at Hopeton established that the circle and square of this major earthwork were constructed at the same time (Lynott, 2009). The sequence of construction at other major works is not known; however, it is suspected that the square addition to the Hopewell Works is just that, a later addition. The Newark complex is such a hodge-podge of earthwork forms (square, large circles, small circles, octagon, parallel walls, oval, mounds) that it could have had an accretional building history. Lepper forcefully argues against this (Lepper, 2004) and thinks the Newark works were constructed in one effort according to a detailed overall plan. If this was true, then all the earthwork forms exhibited at Newark were contemporaneous, but at what time in Hopewell tenure is unknown. The Circleville earthwork was so symmetric that it was probably constructed fully in one sustained effort. However, one of the two concentric circular walls could have been a later addition, and it would have been simple to add a wall concentric to one already in existence.

Interpretations of the building sequences within any one work or even the dates for the separate works themselves are severely hampered by the lack of firm radiocarbon dates. However, there are some dates that could be of assistance in interpreting the Circleville Work. The inner circle has a diameter of 1,050 feet and this is the case for other similar works, such as the one at Highbank. The wall at Highbank has been dated to 90 years A.D. Dates for the other 1,050 foot diameter circles are needed, but this date is probably applicable to the others, including Circleville. None of the other 1,050 foot diameter circles contain central mounds, let alone a truncated and ramped one, as does the Circleville Work. A firm date was recorded for another Hopewell platform mound, and that is the Capitolium Mound in Marietta. This mound dates to 70 A.D. (Pickard, 1996); a date essentially the same as for the 1,050 foot diameter circles. These are early dates for Ohio earthworks as much of the earthwork building is thought to have centered around 200 A.D.

The outer circular wall and ditch combination at Circleville is essentially the same size as the Fairground great circle section of the Newark Works. The other great circle/ditch combination in the Scioto Valley is the Shriver Circle located just south of the Mound City Group. It differs from the other just mentioned two in having the ditch to the outside of the wall, but its measurements are in the same league with the ditch having an average diameter of about 1,070 feet and the wall being about 1,000 feet in diameter. All of these great circular wall and ditch combinations incorporate central mounds. At Circleville then, if the central platform mound and the outer ditch and wall were constructed at the same time, it would have been in the 50 - 100 A.D. period. The combination of circles and ditches is an Adena trait and so is very early in Woodland times and certainly earlier than 100 A.D. But the Adena circular works are much smaller in diameter than the later Hopewell great circle/ditch combinations. A sample taken from the surface below the Fairground great circle wall at Newark gave a date of 160 B.C. (Wymer, 1992), but this date is thought not to be applicable (Lepper, correspondence) for dating the great circle and probably represents an early woodland occupation pre-dating the wall construction.

The two walls at Circleville could have been constructed at the same time, but the difference in soils in them might suggest they were not. Perhaps the use of the ditch was copied from the Fairground great circle at Newark — which has nearly the same diameter at 1,200 feet and the soil so produced was then used as the second wall, with the original clay wall on the inside being retained. But a case can be made that this inner circle was the last to be built, for it was composed of clay drawn up from within the fort, presumably within the circle. A barrow pit within a geometric work was unusual and might suggest that the outer wall and ditch prevented the builders from obtaining the dirt for the inner wall from outside the earthwork. However, recent reinterpretation of the barrow pits at Mound City concludes that they were not true barrow pits but were instead intended to be part of the finished earthwork architecture (Brown, 2009).

But a stronger and more interesting case can be made for the outer wall and ditch being the last constructed. The Circleville earthwork without the outer wall and ditch would be very similar to the Seal circle-square combination and to the Newark and Highbank circle-octagon works in having the circles (all with diameters of 1,050 feet) joined to the squares or octagons by walled avenues. See Figure 6 for a representation of this possible initial construction. Then, for some reason, Hopewell re-constructionists added the outer wall and ditch to the same dimensions (1,188 feet diameter) as the large circle and ditch at Newark. With this addition, the situation at the juncture of the square and circle became pinched, with the outer circle wall actually intersecting the wall of the square (Figure 3). As treated before, the terrace on the inside side of the ditch could have been the former ground surface, rather than an artificially constructed feature. This later construction might have also included addition of or modifications to an already existing burial mound in the center of the circle: removal of the covering of river cobbles to make the pavement on the east side of the mound, truncation, and addition of the ramp on the east side.

There is another circle/mound/square combination, and that is at Marietta where a large conical mound is centered within a 230 foot diameter sacred circle comprised of an inner ditch and an outer wall (see Figure 4). And just to the north lies a square, with eight openings and eight attendant mounds, connected by a

straight wall to the opening in the sacred circle holding the large conical mound. It does appear that the mound and circle combination predated the remainder of the Marietta Works and that the connecting wall and square were later additions. Here the large mound dominates the modest circle, but the resemblance to the Circleville work is still remarkable. If we extend our reasoning for the addition of another circular wall at Circleville, then it could have been the inner one with the original ditch and outer wall being the first built. However, the ditch and circle combination arises in Adena times, but their sacred circles are usually not as grand as those from the later Hopewell period (Newark, Shriver, Circleville) so implying that the ditch and circle at Circleville would have been the first built because of the early precedent of Adena is not necessarily relevant.

If the outer circle and ditch were later additions, then why were they added? Recent work at the Shriver Circle (Cowan, 2007) revealed that the outer ditch was deep and lined with clay to provide a water seal; i.e. to allow the ditch to hold water and to become an actual water-filled moat. This would have had great symbolic and functional meaning for the Hopewell people: evil spirits did not cross over water and the water would have embellished the Earth-Diver creation belief connection for the site. The Circleville ditch could have had a clay lining, but that is not known at this time. Caleb Atwater wrote that the Circleville ditch did hold water, and this could indicate that it was clay-lined, for the deeper soil at Circleville is highly porous. In fact, the Ohio-Erie canal that passed through Circleville had to have a blue clay lining to make it water-tight. The practitioners at Circleville must have been highly impelled to add such a massive structure to an already "finished" site. Would it have been added to fulfill a newer religious concept and its associated symbolism or was it added to conform to practices used by practitioners from the other Ohio sites? But, of course, the large ditch-circle at Circleville could have been the first one built in Ohio, with those at Newark and Shriver coming later.

Excavation across the wall of the great circle at Newark (Wymer, Lepper and Pickard, 1992) showed that the inside of the wall was purposely covered with orange-brown soil while the outside was a darker soil. This color scheme was carefully built in for some important reason. This information gives new purpose to the existence of the double wall at Circleville, with the inner one of clay (likely orange-brown in color) and the outer one of darker gravel and loam. If such a purposeful color scheme was used in the Circleville walls, then, again, the walls could well have been constructed at the same time, but then again the outer wall and ditch could have been added later to provide a ditch and a second circular wall of the desired darker color.

One fact that ties the Circleville, Highbank, Newark, Hopeton, and Piketon (Seal) works together is that each has a circle measuring 1,050 feet in diameter. It cannot be coincidence. In the Circleville case, it was the inner circle. The Circleville work circle sizes actually coincided with sizes of the two major circles at Newark: the circle in the octagon/circle combination at 1,050 feet and the great circle/ditch combination at ca 1,150 - 1,200 feet. The great similarities between the Newark, Highbank, and Circleville works suggests they were very likely contemporaneous. Carbon samples taken from features below the great circle at Highbanks gave a firm date of 90 yrs A.D. (Greber, 2002). This is a fairly early date in the Hopewell era, and it could indicate that the great earthworks combining octagons or squares conjoined with 1,050 foot diameter circles and possessing a center of symmetry were some of the first built in Ohio.

Location

The Circleville Work was the furthest north of the major Scioto Valley geometric earthworks (Figure 7). Seventeen miles to the south lie the geometric works around Chillicothe: Blackwater, Junction, Steele, Dunlap, Cedar Banks, Hopeton, Mound City, Anderson, Hopewell, Seip, Baum, Harness, Highbank, and the Works East. Further south there are even others such as those at Piketon (Seal) and Portsmouth. The Newark Works lie 40 miles to the east northeast in the Muskingum River drainage.

The Circleville Work was situated 1,600 feet east of the Scioto River at an elevation of 690 feet on a level terrace that is now occupied by the City of Circleville. Hargus Creek flows by 870 feet to the north, and empties into the Scioto River just to the west. Big Darby Creek joins the Scioto River from the west just north and west of the Work and Walnut Creek joins the Scioto about 5.4 miles to the north. To the South, Scippo Creek lends its gentle meanders to the east of the Scioto. The location lies in a strategic position with its many streams and, of course, the Scioto River. In historic times, and certainly in prehistoric times as well, five indian trails met at Circleville, and this is further evidence for this location's strategic importance.

Current study (Dancey and Pacheco, 1997) indicates that the tripartite works around Chillicothe (Harness, East, and Seip and perhaps Baum) were probably contemporaneous, at least for part of their active existences, and that there might have been shared burials and offerings among the different works by their different proprietors. It is felt too that the Highbank Work is an "intrusion" into the Chillicothe tradition, but as it was early (A.D. 90), the later tripartite ones turn out to be the "intrusions." The question arises as to how long each earthwork functioned and if the Highbank and the larger tripartite works were used contemporaneously. If that were so, then the Newark and Circleville works were perhaps remote "allies" of the Highbank proprietors and their greater distances apart might indicate a different settlement pattern and perhaps a different "territorial" understanding. None of these works have the large incorporated community burial mounds like those at Harness, Hopewell, and Seip, and this certainly suggests a different social arrangement.

The isolation of the Circleville location and its relatively un-urbanized condition render it nearly perfect for the study of Hopewell settlement patterns and their relation to a major geometric earthwork. I have been surveying the Scioto valley and feeder stream valleys and associated highlands around Circleville now for 44 years in search of Hopewell settlements and earthworks. Much remains to be done, and a detailed report will be written in the future on this subject. The results so far are interesting. There appear to be smaller earthworks surrounding Circleville with small Hopewell habitation sites in their vicinities. No large Hopewell villages have been found anywhere, but the smaller hamlets are ubiquitous. The habitation sites so far found are in both the Scioto River valley and feeder stream valleys and also on the higher elevations above the valleys.

Unfortunately, nothing is known about habitation sites in the area now covered by the city of Circleville. Several areas within the city limits have been looked at and no Hopewellian material was found. These areas lie just to the north of the earthwork location along both sides of Hargus Creek.

A small copper celt was found in 1898 with a burial near the present courthouse (Converse, 1973), which would have been inside the circular part of the earthwork. Copper celts were not normal utilitarian fare, and this suggests some importance for the buried individual. A frog effigy platform pipe was also found in downtown Circleville in the late 1890's - possibly with the same burial (Otto, 1991). A copper breast plate and another copper artifact were found in downtown Circleville during a store remodeling effort in an area that would also have been within the circle just northwest of the central burial mound. The mounds in the square were declared by Atwater to contain no burials, but one of these mounds was destroyed by street widening in the early 1900's, and it was found to contain a middle woodland pot (OAHS, 1900) and a human skull not accompanied by a skeleton. This was probably one of the mounds in the southern part of the square.

The supposed paucity of Hopewell habitation sites in southern Ohio contrasts with the abundant geometric earthworks there. It is argued by some (Brown, 2009) that this indicates the earthworks were used and built periodically by many people from a very wide area, including parts of Indiana, the southern states and all of Ohio and perhaps populations to the east and north. The people then residing around the earthworks in southern Ohio composed a caretaker population. This would imply that each earthwork was used for a certain period of time and then abandoned in favor of a new site and the ensuing construction and use of a different earthwork of a different design. The dates of use for all the earthworks are not known — there is the possibility that many of the earthworks were contemporaneous. This possibility requires a more permanent and large local supporting populations. More Hopewell habitation sites are being discovered now that an emphasis is being placed on locating them. The signs so far, at least for the Circleville area, indicate there are many Hopewell habitation sites lying around the former earthwork location.

Hopewell people appeared to have lived in dispersed small hamlets as was first proposed by Prufer (1965). How all these people used the major earthworks over time and area has yet to be determined. It will require much research and teamwork among avocational and professional archaeologists and landowners[1]. Did people from the Chillicothe and Newark and other more farflung areas use the Circleville work or did they have their own? Or did all the Hopewells in Ohio and surrounding areas use it for one or several generations, and then abandon it in favor of a new earthwork ceremonial complex? The deaths of the two individuals buried in the central Circleville mound, if they were central figures in the earthwork operations, could have signaled the *coup de grace* for the Circleville earthwork. The next generations could then have moved operations to another earthwork such as Highbank or Newark. It is safe to assume that a fairly large population must have been required to build and use the earthworks, and therefore the wide-

ly scattered habitation sites and their smallness emphatically indicate that each earthwork must have served a large area.

Conclusions

Squier and Davis were wrong to suggest that the Circleville Earthwork was no more remarkable than the other earthworks they described in their book, and they were absolutely mistaken to state that its dimensions were less than those of the other major works in Ohio. They did suggest that it was *peculiar* in having a double circle — they could have stated that it was unique in this aspect. Also, the two concentric circles were large and their diameters matched those of circles in other major works described by Squier and Davis: 1,050 feet for the inner circle and 1,188 feet for the outer circle. The square part of the Work measured about 874 feet to a side (Marshall, 1987) and this approximates the dimensions of the squares used in other major works.

It can be flatly stated that the Circleville earthwork was an important Hopewell center, and its design establishes its close relationship to the circle/octagon earthwork complexes: Highbank in Ross County and the Newark Works in Licking County. How it and the other earthworks were used remains at question. They were no doubt multifunctional and served as social and religious centers and were probable pilgrimage destinations for the widely scattered faithful. Only a massive excavation of one of these major works and comprehensive surveys for habitation sites around it could give us the kind of information needed to answer the many questions about their uses and the people who used them.

The work done in the Little Miami River valley (Cowan, Genheirner and Sunderhaus 1998) showed that when the Great Posthole Circle at the Stubbs Work was retired from use, the posts were removed and their trace was mounded over with earth. This practice could have been the *modus operandi* for many of the other works in Ohio and the earthwork patterns we see today could be just the end-product of the Work's life; that is, its final commemoration by burial with a mound. When in use, the works were essentially wood henges or possibly combinations of wooden posts and earthen walls.

The Circleville Work with its unique characteristics provides us with some hints about Hopewell ceremonialism as explored in the preceding discussions. The settlement pattern around Circleville is undergoing continuing study, and results from this survey should give more insight into the Hopewell phenomenon. The settlements match those described by Prufer in being small hamlets, like the McGraw Site, but they are located not only in the valleys of the major streams, but are also scattered across the landscape in small stream valleys and on the higher ground overlooking the valleys. However, most of the habitation sites appear to lie in the floodplains of the major streams and the Scioto River, and many are hidden from study by overlying alluvial deposits.

The Hopewells were a fascinating people who left us with many monumental and intriguing earthworks and also monumental questions. Their earthworks were each unique, but many shared similar attributes and dimensions. This suggests widespread communication and perhaps the existence of a group of earthwork architects and a construction organization — perhaps much like that of the cathedral builders of medieval Europe.

We of an archaeological bent can all be thankful that whoever the Hopewells were, and whatever they were doing, makes the archaeology of eastern North America a most engaging pursuit.

[1] An organization was formed in 2006 to study the Hopewell settlement patterns around Circleville, and it is termed the Pickaway Archaeology Research Group, i.e.. PARG.

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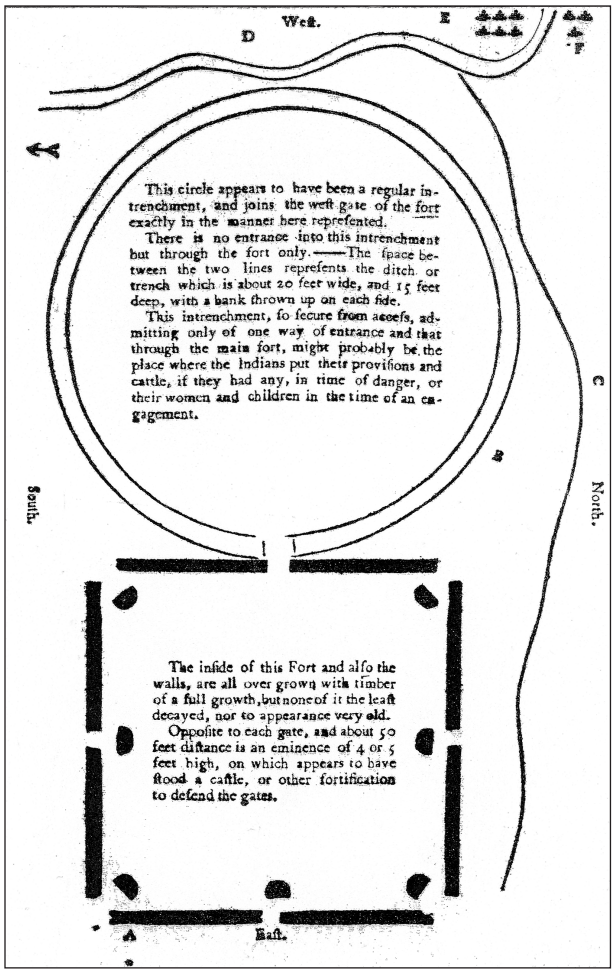
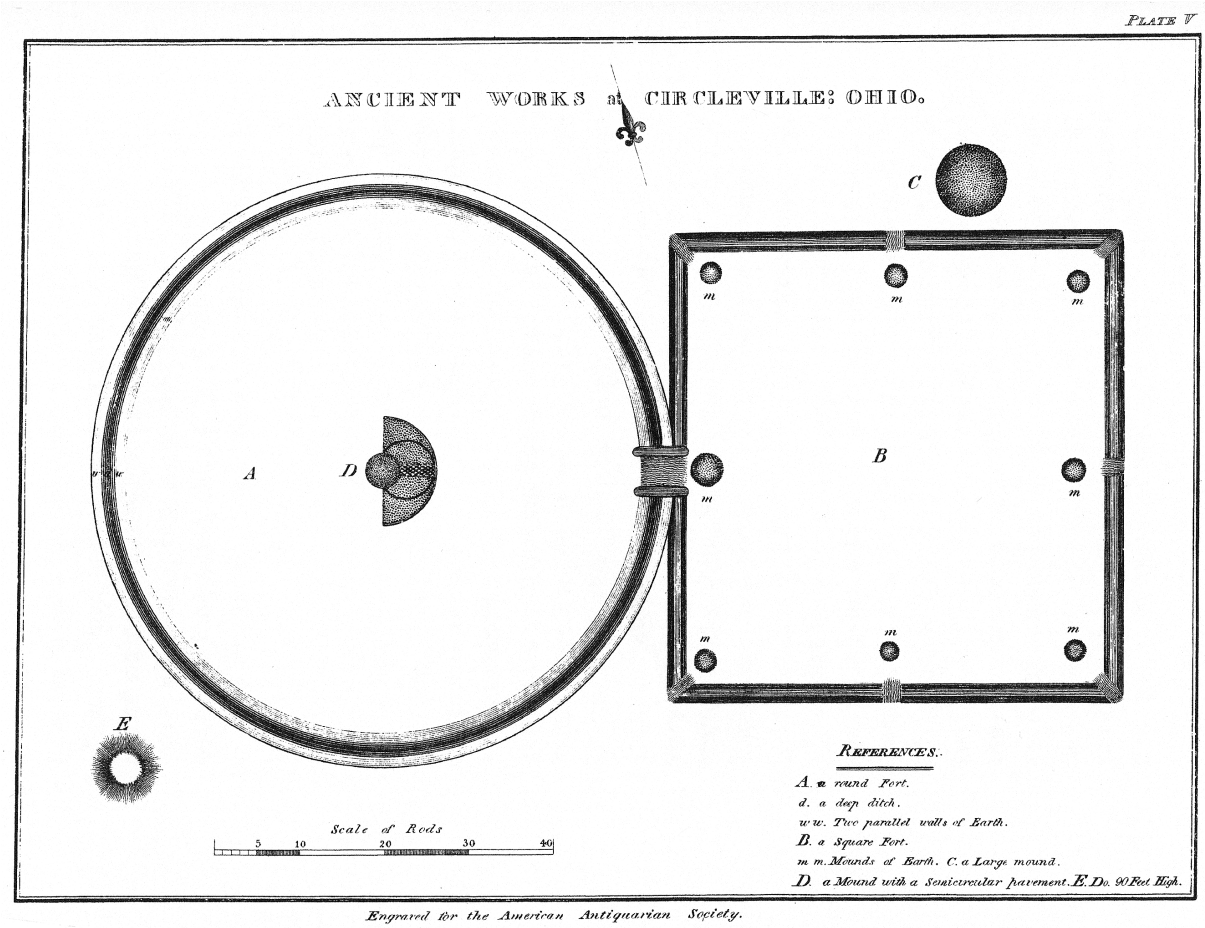


Figure 1.
The 1772 Jones/Irwine map of the Circleville Work. The circular ditch was emphasized, as it should have been, since it was very deep at fifteen feet while the walls on each side were only about four feet high. The square is boldly mapped and all eight openings are shown with seven of the interior mounds. It is worth noting that mounds are not shown in the center of the circle, in the square at the opening to the circle, nor to the southwest, as they are in later maps. The author of this map firmly relates that his mapping of the entrance way from the circle to the square is exact! This survey is thought to have been a "horseback" survey, but the ratio of the circle diameter to the length of the square sides is very close to that measured by later surveys. The stream locations are not shown accurately, as Hargus Creek flows about 900 feet to the north and the Scioto River lies 1,600 feet to the west.

Figure 2.
Caleb Atwater's map of the Circleville Work published in 1820 in his book: Antiquities Discovered in the Western States. His map is highly detailed and several of the salient features are described fully in the text of the book. Atwater showed two elongated mounds serving as walls along the avenue connecting the circle and square parts of the Work rather than the low walls utilized in many of the other conjoined earthworks in Ohio. The Jones/Irwine map of 1772 did not show such a feature.



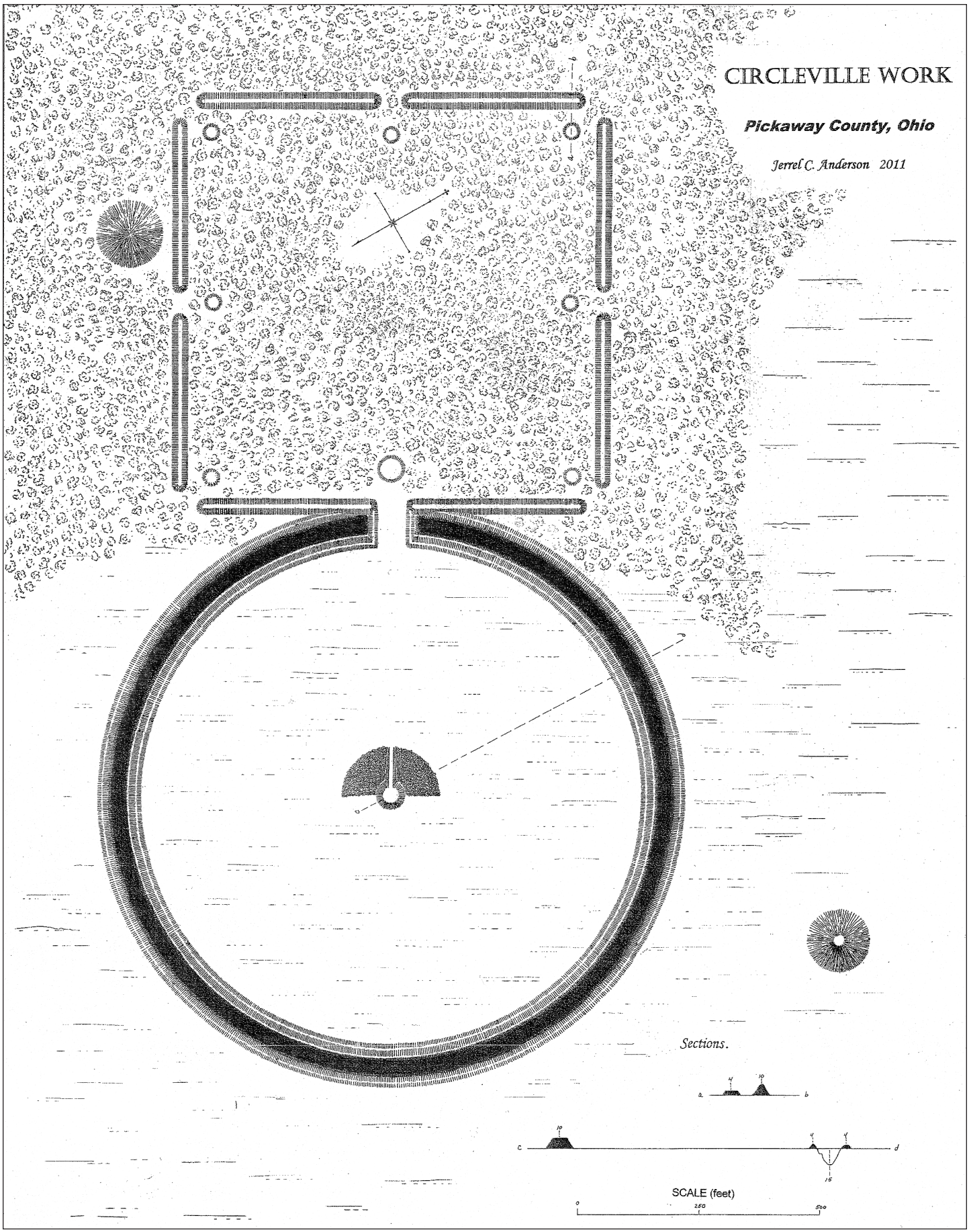


Figure 3. A map of the Circleville Work as it should have been presented in Squier and Davis's famous 1847 book: Ancient Monuments of the Mississippi Valley. They were noticeably dismissive of the Circleville Earthwork and furnished a miniscule map of it. The Circleville Work should have been more prominently featured by them since it was one of the most important large geometric earthworks in the Scioto Valley.

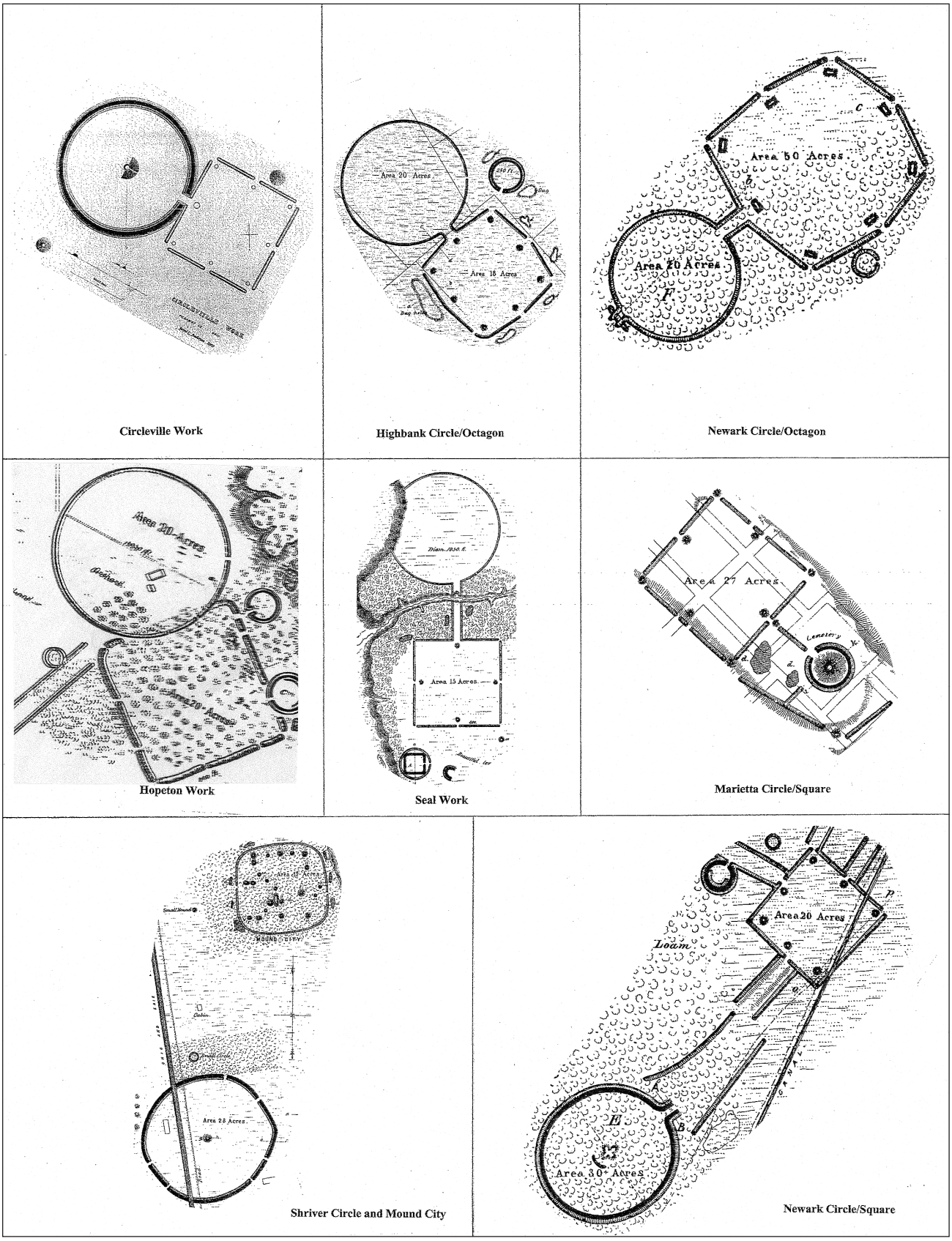


Figure 4 Pictured here are many large Ohio earthworks that combine circles and squares or octagons. The three top works all feature a true axis of symmetry and all have circles with a diameter of 1,050 feet connected to an enclosure having walls with eight segments and eight interior platform mounds fronting the openings between the segments. The Highbank Work located in Ross County contains a roughly octagonal segmented enclosure, and the Licking County Newark Work also utilizes an octagonal enclosure. Circles measuring 1,050 feet in diameter are also present in the Seal and Hopeton works located in Ross County, and each is also connected to a square enclosure. This distance of 1,050 feet appears to have been a standard unit of measure for the Hopewell, and has been termed by Hively and Horn as the "OCD", or Observatory Circle Diameter. All are shown with their proper orientations to the cardinal points with north being toward the top of the page.

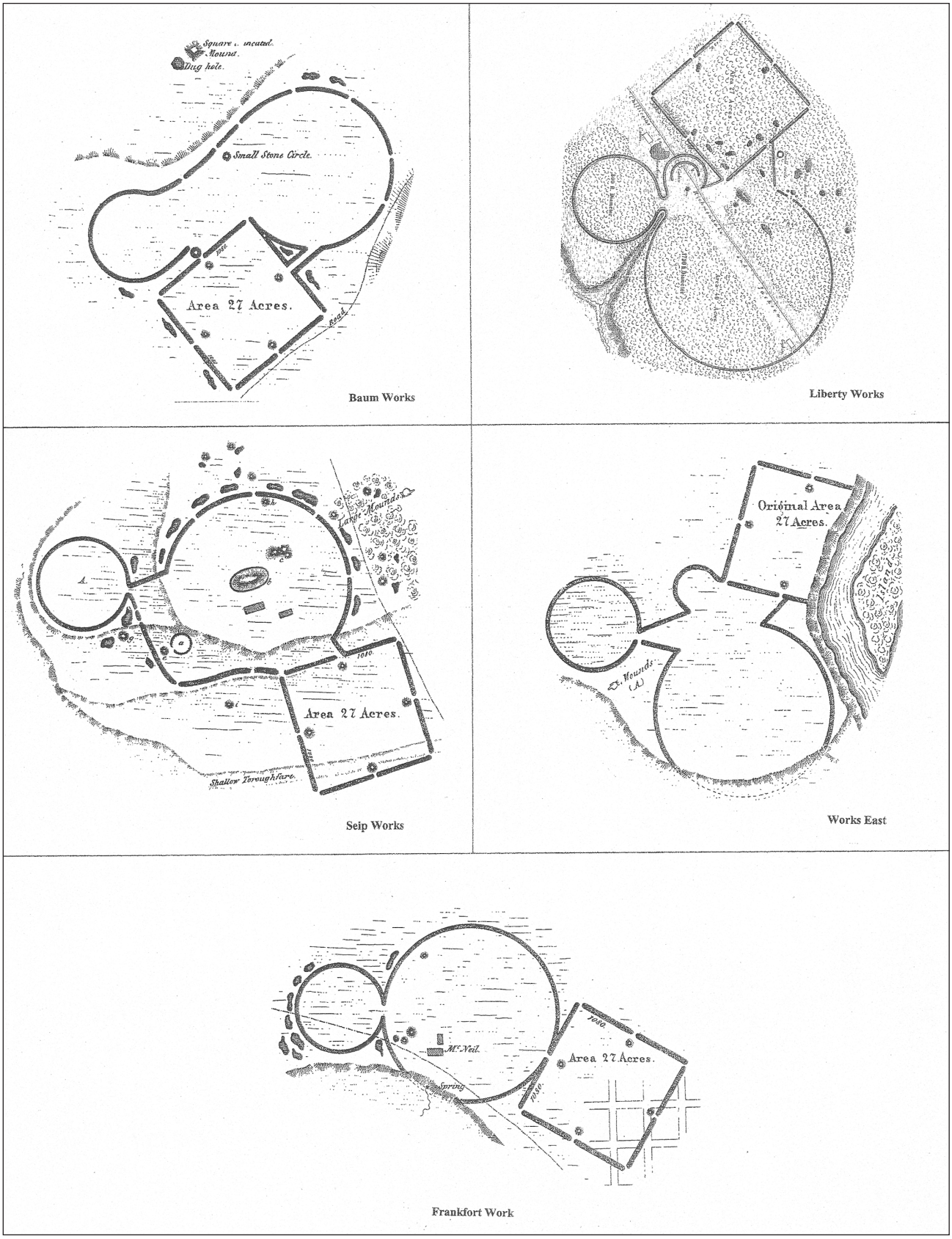


Figure 5. Some of the major tripartite geometric earthworks of south-central Ohio are drawn roughly to scale here with north being to the top. The large essentially integrated tripartite works feature two or three circular or nearly circular parts and all contain a square with a side length of 1,080 feet. These types are thought to be later in the Hopewell sequence, while the more symmetrical works featuring circles of 1,050 feet and conjoined squares or octagons could compose an earlier set.

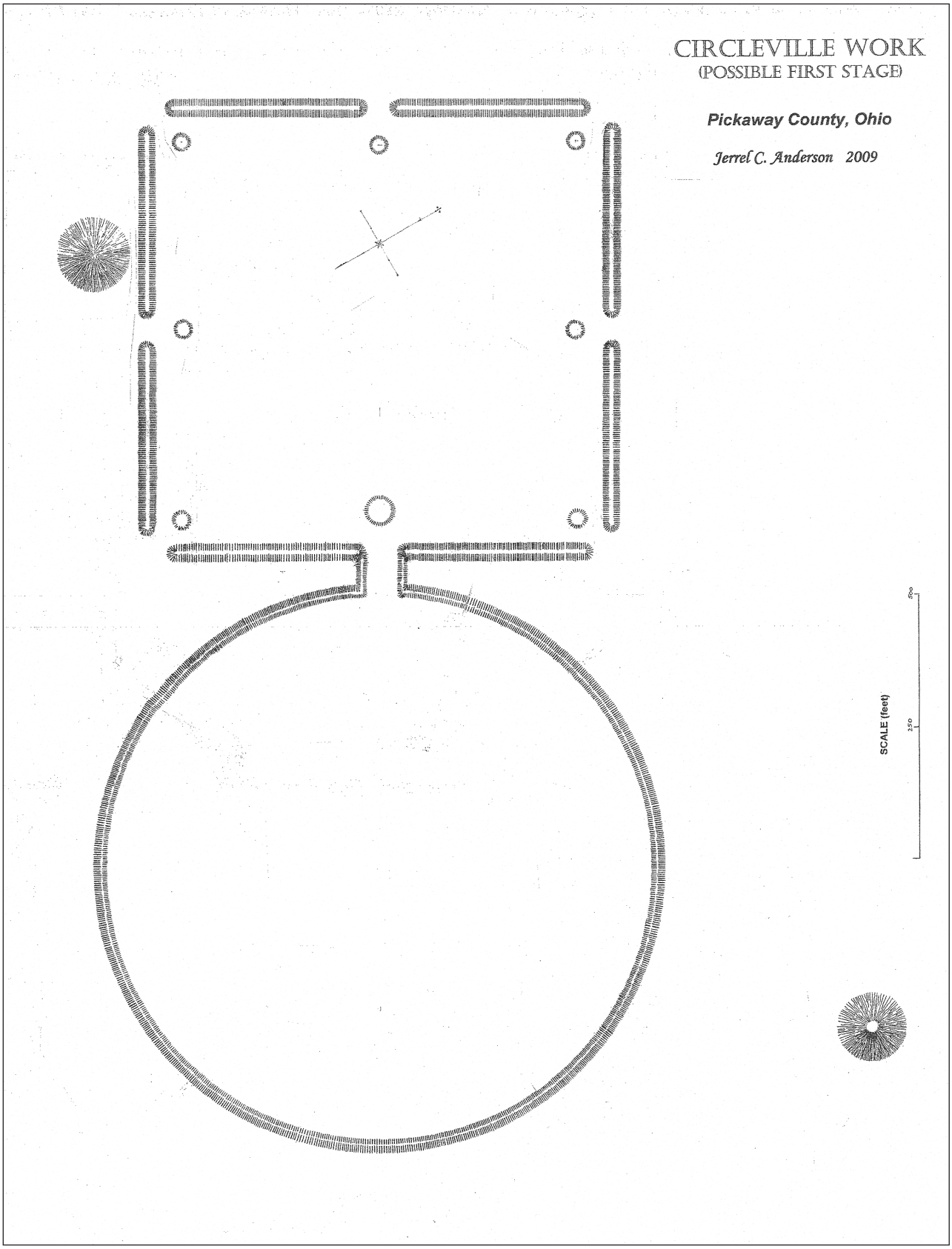


Figure 6. A possible early stage for the Circleville Work consisting of the 1,050 foot diameter circle conjoined to the square with a walled avenue. No central mound is included here in the circle since none of the other circles in Ohio having diameters of 1,050 feet contain centrally located mounds. The outer wall and deep ditch would have been added later along with the truncated and ramped central mound. The opposite case could also have been possible, with the initial stage being simply a large circle/ditch combination with a central mound followed by the later addition of the inner 1,050 foot diameter circular wall and the square with its eight interior mounds. The most likely case is that the Work was constructed from a well-conceived plan either in one sustained effort or in sequential stages.

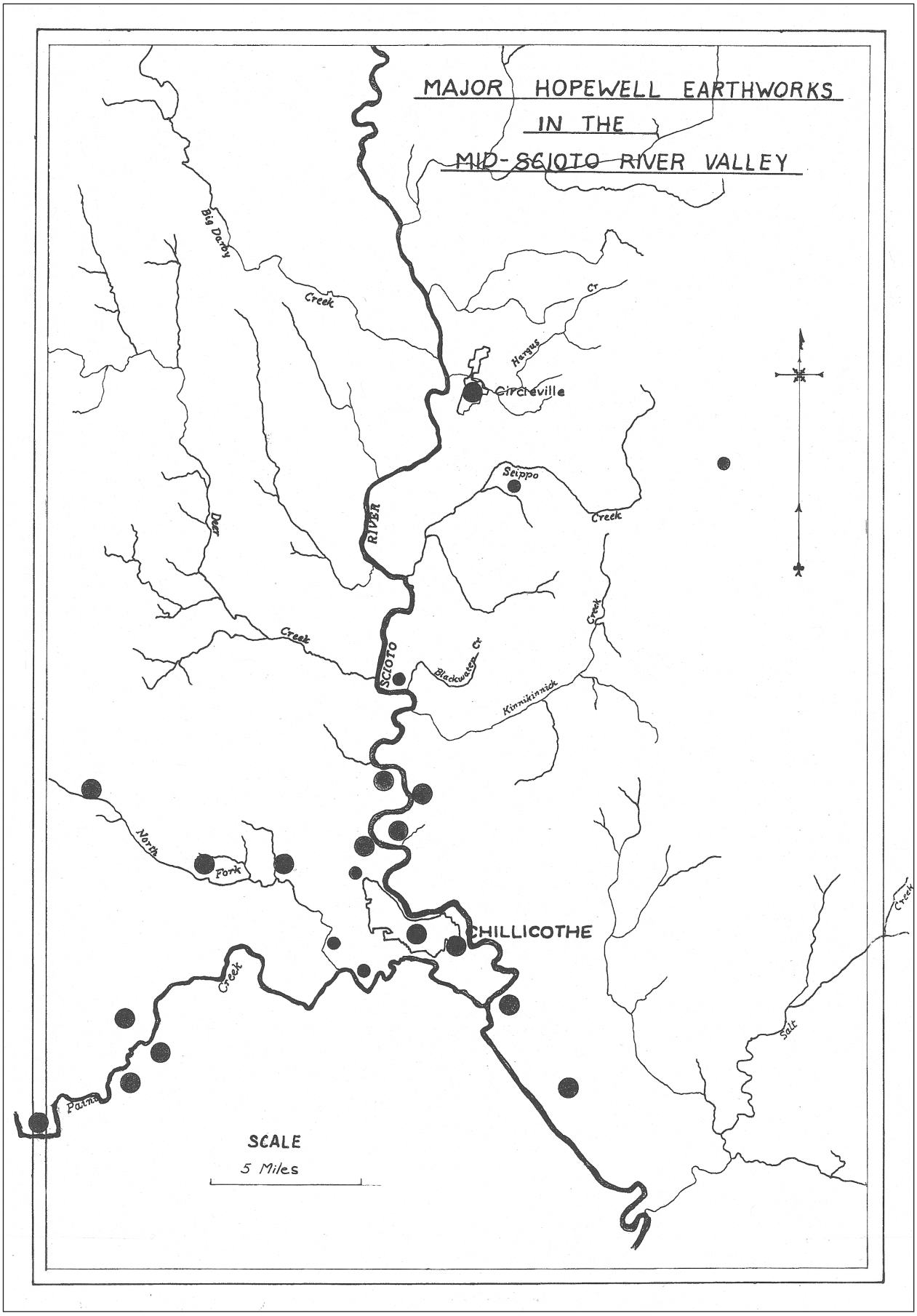


Figure 7. Locations of the Scioto River valley major geometric earthworks in south-central Ohio. Note the relative isolation of the Circleville Work from the cluster of works surrounding Chillicothe to the south. The Newark works lie forty miles to the northeast in the Licking River valley. The Hopewell settlement pattern around Circleville is undergoing study in an effort to better understand how these people interacted with their environment and the major earthwork within their midst.